

# *HRVOC Rules Overview and Update*

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# Background

- ◆ Scientific evaluation conducted per consent order in settlement of BCCA lawsuit over rules requiring 90% NO<sub>x</sub> reductions
- ◆ Highly reactive VOC play a role in rapid ozone formation
- ◆ Industrial VOC emissions likely significantly understated in earlier inventories
- ◆ Controlling HRVOCs is necessary to prevent many of the rapid ozone forming events



# HRVOC Defined

## §115.10 (17)

- ◆ ethylene
- ◆ propylene
- ◆ 1,3-butadiene (Harris County only)
- ◆ butene (all isomers) (Harris County only)



# HRVOC Rules

- ◆ 4 source categories in 3 Divisions of Subchapter H:
- ◆ Division 1: Vent Gas Control and Flares
- ◆ Division 2: Cooling Tower Heat Exchange Systems
- ◆ Division 3: Fugitives



# HRVOC Rules

- ◆ First version published in January 2003
- ◆ Revised version published in November 2003
- ◆ HRVOC Stakeholder Group formed in December 2003
- ◆ 5 meetings were held for input on rulemaking
- ◆ HRVOC rules with revised cap strategy were adopted and published in December 2004



# HRVOC Rules

Key components of HRVOC rules:

- ◆ long-term cap and trade program for Harris County
- ◆ short-term cap of 1200 lbs/hr in Harris County
- ◆ monitoring and testing for flares, vents, and cooling towers
- ◆ fugitive emission requirements



# Division 1 – Vent Gas Streams

## Parameter Monitoring: §115.725(a)

- ◆ Select parameters as compliance indicator.
  - ▶ e.g. production rate, loading rate, pressure, minimum O<sub>2</sub>, minimum temperature, etc.
- ◆ Establish operating limits based on hourly average during testing.
- ◆ Follow written monitoring plan.
- ◆ Submit plan for review upon request.



# Division 1 – Vent Gas Streams

## Vent Test Plans: §115.726(a)(2)

- ◆ Must be submitted with test notification to Houston Regional Office at least 45 days prior to testing.
- ◆ No longer require specific prior approval.
- ◆ Modifications & alternatives to test methods must be approved.



# Division 1 – Vent Gas Streams

## Degassing Safety Devices: §115.725(b)(2)

- ◆ Device other than a flare used to prevent the release of unburned organic vapors from geological storage facilities resulting from either equipment or containment failure.
- ◆ Allowed to use process knowledge in lieu of direct vent testing.



# Division 1 – PRVs

PRV monitoring system: §115.725(c)

- ◆ Time & duration of each relief event.
- ◆ Status of PRV: open/closed or percent open.
- ◆ Flow rate during relief event: direct flow or parameter monitoring.
- ◆ Process knowledge for HRVOC concentrations
- ◆ Written monitoring plan.
- ◆ Must submit plan for review upon request.



# Division 1 – Flares

New/revised categories of flares: §115.725

- ◆ Loading flares (e): include marine loading
- ◆ Maintenance flares (f): SSM activities
- ◆ Emergency flares (g)
- ◆ Flares in temporary HRVOC service(h)
- ◆ Liquid/dual phase flares (i)
- ◆ Flares in metal alkyl service (j)
- ◆ Multipurpose flares (k): Loading, maintenance, emergency flares



# Division 1 – Flares

Analyzer calibration requirements: §115.725(d)

- ◆ PS 9 calibration requirements apply only to HRVOCs
- ◆ Manufacturer's recommended procedures may be used for non-HRVOC monitored components.



# Division 1 – Flares

## Flare Monitoring QAPs: §115.726(a)

- ◆ No longer required to submit for prior approval.
- ◆ Develop, implement, follow a written QAP and keep on-site.
- ◆ Modifications/alternatives must be approved.
- ◆ Must submit for review upon request.



# Division 1 – Flares

New alternatives for net heating value  
allowed in the rule: §115.725(m)

- ◆ Online calorimeter.
- ◆ Supplemental fuel:
  - ▶ Monitor supplemental fuel flow.
  - ▶ Continuously maintain sufficient supplemental fuel to maintain minimum net heating value.
  - ▶ Assume zero BTU contribution from the waste gas stream.



# Division 2 – Cooling Towers

## Cooling Tower Monitoring QAPs: §115.766(i)

- ◆ No longer required to submit for prior approval.
- ◆ Develop, implement, follow a written QAP and keep on-site.
- ◆ Modifications/alternatives must be approved.
- ◆ Must submit for review upon request.



# Division 2 – Cooling Towers

Detection limit changes: §115.766(a)

- ◆ 10 ppbw detection limit requirement for speciated HRVOCs removed.
- ◆ Must use 50% of detection limit to quantify HRVOC for non-detects.
- ◆ 25 ppbw MDL required for total VOC monitoring in §115.764(a).
- ◆ Must use 50% of detection limit for total VOC non-detects.



# Division 2 – Cooling Towers

New categories:

- ◆ Finite volume systems (i.e., refrigeration systems): §115.764(h)
  - ▶ Monitor system volume level in lieu of total VOC as indicator of leaks.
- ◆ Jacketed reactors: §115.764(b)
  - ▶ Monitored according to requirements of cooling tower heat exchange systems less than 8000 gpm, regardless of size.



# Division 2 – Cooling Towers

Monitor location alternatives: §115.764(g)

- ◆ General flow rate monitoring alternative
  - ▶ Monitor flow from location representing total flow rate to the cooling tower
- ◆ Multiple service cooling towers:
  - ▶ Monitor flow from a point that represents flow from just HRVOC-containing processes.
  - ▶ Monitor concentrations at point leaving HRVOC-containing process and prior to mixing with cooling water from other process, using applicable requirements for the system



# Division 3 - Fugitives

Revised definition for  
difficult-to-monitor components:

- ◆ Components that cannot be inspected without elevating the monitoring personnel more than two meters above a permanent support surface; or
- ◆ Components that would require a permit for confined space entry to allow access for monitoring.



# Division 3 - Fugitives

## Pressure Relief Valves

- ◆ Monitor body quarterly unless equipped with rupture disk
- ◆ Monitor vents within 24 hours after a release event unless
  - ▶ unsafe-to-monitor component, the next time it is safe.
  - ▶ difficult-to-monitor component, within 15 days



# Division 3 - Fugitives

## Delay of repair

- ◆ Emissions from nonrepairable leaking components calculated on a daily basis rather than a cumulative basis.
- ◆ Shutdown to repair leaking components not required if nonrepairable emissions are less than de minimis limit of 500 pounds.



# Division 3 – Fugitives Audit

The intent of the fugitive audit program is to identify any patterns that are indicative of failure to properly implement EPA Test Method 21.



# Division 3 – Fugitives Audit

- ◆ Independent third party audit once per year.
- ◆ Site-wide basis instead of by process unit.
- ◆ Random sampling of the affected\* valves.
- ◆ Sample size determined by hypergeometric distribution
- ◆ Each valve has an equal chance of being selected
- ◆ \*Affected valves: In HRVOC service; not exempt from quarterly monitoring, not difficult-to-monitor list or unsafe-to-monitor.



# Compliance Dates

- ◆ Cap and trade program in Harris County: January 1, 2007
- ◆ Sites exempt from HECT (<10 tpy) in Harris County: April 1, 2006
- ◆ Short-term cap in Harris County: April 1, 2006
- ◆ Monitoring requirements: December 31, 2005
- ◆ Fugitive requirements: March 31, 2004
- ◆ Initial fugitive audit: December 31, 2005



# Contacts

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# Questions?

